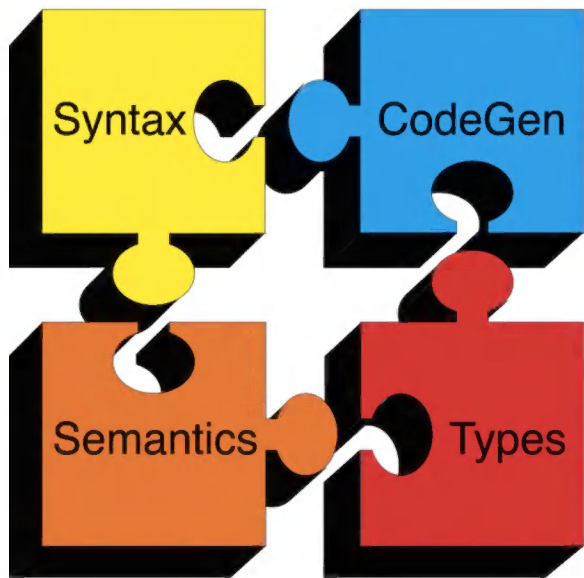




Compilers

Java Coercions

- Java allows primitive types to be *coerced* in certain contexts.
- In $1 + 2.0$, the `int 1` is widened to a `float 1.0`
- A coercion is really just a primitive function the compiler inserts for you
 - Most languages have extensive coercions between base numeric types

- Java distinguishes two kinds of coercions & casts:
 - *Widening* always succeed (**int** → **float**)
 - *Narrowing* may fail if data can't be converted to desired type (**float** → **int**, downcasts)
- Narrowing casts must be explicit
- Widening casts/coercions can be implicit

What is the only type in Java for which there are no coercions/casts defined?

- Coercions can lead to surprising behavior
 - Consider an example from PL/I
 - Let A, B, C be strings of 3 characters

$B = '123'$

$C = '456'$

$A = B + C$

- What is A ?